

HIRSCH et al
Appl. No. 10/051,462
November 10, 2005

AMENDMENTS TO THE SPECIFICATION:

Please amend the caption on page 1, line 16, as follows:

~~Discussion of the Prior Art~~ Related Art and Other Considerations

Please amend the caption on page 4, line 27, as follows:

BRIEF SUMMARY OF THE INVENTION

Please amend the paragraph beginning at page 4, line 29, and continuing to page 4, line 38, as follows:

~~According to the invention, a~~ A method of processing distorted short-term speech spectra for automatic speech recognition ~~is provided, the method comprising~~ comprises providing a set of reference speech spectra, determining the reference speech spectra of the set of reference speech spectra which correspond to the distorted short-term speech spectra, estimating a frequency response taking into account both the distorted short-term speech spectra and the corresponding reference speech spectra, and compensating the distorted short-term speech spectra based on the estimated frequency response.

Please amend the paragraph beginning at page 5, line 1, and continuing to page 5, line 11, as follows:

~~A device according to the invention~~ A device for processing distorted short-term speech spectra for automatic speech recognition comprises a database for reference speech spectra, a processing stage for determining the reference speech spectra corresponding to the distorted short-term speech spectra and for estimating a frequency response taking into account both the distorted short-term speech spectra and the corresponding reference speech spectra, and a compensation unit for compensating the distorted short-term speech spectra based on the estimated frequency response.

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Please amend the paragraph beginning at page 5, line 13, and continuing to page 5, line 20, as follows:

~~According to the invention,~~ The expression "speech spectra" does not only comprise speech information in the spectral domain, but also speech information in any domain that can be derived from the spectral domain by a linear transformation. For example, the expression "speech spectra" also denotes speech information in the cepstral domain since it has been obtained from speech information in the spectral domain by means of a Discrete Cosine Transformation (DCT).

Please amend the paragraph beginning at page 10, line 4, and continuing to page 10, line 16, as follows:

So far the ~~invention technology~~ was described in context with compensating for a frequency response in the distorted short-term speech data. Besides the compensation for the convolutional noise the invention also relates to the compensation for additive noise present in the distorted speech data. Preferably, the additive noise is compensated for prior to determining which reference speech spectra correspond to the distorted speech spectra. This means that the distorted input speech spectra are firstly subjected to a compensation of the additive noise and that the thus compensated speech spectra are subsequently used as a basis for determining the reference speech spectra, for estimating the frequency response and for compensating for the frequency response.

Please amend the paragraphs beginning at page 11, line 11, and continuing to page 11, line 20, as follows:

Fig. 1 is a block diagram of a first embodiment of a device for processing distorted short-term speech spectra ~~according to the invention;~~

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Fig. 2 is a block diagram of a second embodiment of a device for processing distorted short-term speech spectra ~~according to the invention~~; and

Fig. 3 is a schematic diagram of a distributed speech recognition system ~~according to the invention~~.

Please amend the paragraph beginning at page 18, line 27, and continuing to page 18, line 32, as follows:

In Fig. 3, an embodiment of a Distributed Speech Recognition system (DSR) 100 ~~according to the invention~~ is illustrated. The DSR 100 comprises a network server 102 which communicates with a plurality of terminals 104 via wired or non-wired communication links 106. The terminals 104 can be configured as mobile telephones or conventional wired telephones.

Please amend the paragraph beginning at page 19, line 17, and continuing to page 19, line 22, as follows:

Although the ~~invention~~ embodiment has been described with reference to Fig. 3 for a distributed speech recognition system, the devices 10 depicted in Figs. 1 and 2 may also be arranged in a conventional automatic speech recognition system where the speech analyzing stage 12 and the speech recognition stage 14 are positioned at the same location.